

United States Government

Department of Energy

memorandum



000030267

DATE: May 17, 1993

REPLY TO
ATTN OF: EM-453 (H. Belencan, 903-8549)

SUBJECT: Comments on Technical Memorandum Number 5 for the Phase I RFI/RI Work Plan for Operable Unit 4

TO: F. Lockhart, Rocky Flats Office

The Office of Southwestern Area Programs, Rocky Flats/Albuquerque Production Division (EM-453) has reviewed the subject document and is providing the attached comments. These comments were previously sent via facsimile to S. Surovchak of your staff on April 22, 1993. Please address these comments before the document is finalized.

In general there are two items which we believe merit further consideration. There appears to be the potential for the wind tunnel study that has been proposed for Operable Unit 3 to provide useful data to the Fugitive Dust Model for Operable Unit 4. Please consider this possibility if the wind tunnel study is performed and the data becomes available.

Unless its exclusion can be justified, it is also suggested that uptake by aerial foliage of volatile organic compounds in the atmosphere be considered for inclusion in future modeling efforts.

Please contact Helen Belencan on (301) 903-8549 or me on (301) 903-8191 if you have any questions on these comments.

Autar Rampertaap
Chief
Rocky Flats Branch
Rocky Flats/Albuquerque Production Division
Office of Southwestern Area Programs

cc w/o attachment:
R. Greenberg, EM-453
J. Ciocco, EM-453.1

cc w/attachment:
S. Surovchak, RF

ADMIN RECORD

A-DU04-000507

DOCUMENT REVIEW: DRAFT TECHNICAL MEMORANDUM NO. 5 TO FINAL PHASE I RFI/RI WORK
PLAN, DESCRIPTION OF MODELS FOR THE
HUMAN HEALTH RISK ASSESSMENT,
ROCKY FLATS PLANT SOLAR EVAPORATION PONDS (OPERABLE UNIT NO. 4)
PUBLISHED: MARCH, 1993

GENERAL COMMENTS

1. It is suggested that Operable Unit No. 4 activities be coordinated with those for Operable Unit No. 3. The wind tunnel study that has been proposed for Operable Unit No. 3 may provide useful model input data, such as particulate emission factors that could be incorporated in the Fugitive Dust Model for Operable Unit No. 4. Please consider this possibility if the proposed wind tunnel study is performed and data become available.
2. No models are presented for estimating uptake by aerial foliage of volatile organic compounds in the atmosphere. This pathway may be relatively important for onsite exposures to chemicals with high volatility and low water solubility. It is suggested that this pathway be considered for inclusion in future modeling efforts, unless its exclusion can be justified.

SPECIFIC COMMENTS

1. Executive Summary, p. iii, second paragraph: It should be stated that model implementation is contingent upon detecting significant contamination of soils/sediments. It is stated that if the data collected during the Phase I RFI/RI indicate that the conceptual model presented is in error, then alternative models will be considered. The data should be evaluated and screened to assess the need for further modeling and analysis.
2. Section 1.2, p. 1-3: Disconnections between Figure 2-1 and the section should be corrected or clarified. Two future onsite workers and no current onsite workers are listed here. In contrast, Figure 2-1 shows a future onsite worker and a current onsite worker. Presumably, one of the future onsite workers on p. 1-3 should be a current onsite worker.
3. Section 3.2, p. 3-3, second paragraph: The concentration in the reproductive crop portion should not be included in this list because it is calculated by the model; it is not required input to the model. The fourth bullet in this paragraph lists needed model assumptions relating to plant characteristics.
4. Section 3.2.1, p. 3-4, first equation: The equation for estimating the vegetation concentration due to atmospheric deposition (CVD) includes an intercept fraction-to-productivity ratio (r/Y). The value provided for the r/Y term is $0.32 \text{ m}^2/\text{kg}$, from Baes et al. 1984. The value for r/Y should be 0.032. Presumably, the value was obtained from p. 76 of Baes et al., 1984, where an equation expressing intercept fraction, r , in terms of productivity, Y , is provided for exposed produce. The equation in Baes et al., 1984 is:

$$\begin{aligned} r &= 1 - \exp(-0.0324*Y) \\ \text{Rearranging,} \quad \exp(-0.0324*Y) &= 1 - r \\ \text{or,} \quad -0.0324*Y &= \ln(1 - r) \end{aligned}$$

Since $0 \leq r \leq 1$, $\ln(1 - r) \approx -r$. Therefore,

$$\begin{aligned} -0.0324*Y &\approx -r \\ \text{Rearranging,} \quad r/Y &\approx 0.0324 \end{aligned}$$

Please correct the value for the r/Y term here and in Table 3-2. In addition, please provide a reference source for the CVD equation.

5. Section 3.2.1, p. 3-5, second equation: A more realistic estimate of the percent water content of vegetative plant parts should be used. The dry-to-wet weight conversion factor (DWC) for vegetative plant parts is assumed to be 1.0. This implies that the vegetative parts contain no water. This appears to be an overconservative assumption.
6. Section 3.2.1, p. 3-5, third equation: The equation for calculating the crop concentration (C_c), weighted by the proportional intake of vegetative and reproductive plant parts appears to be incorrect and should be revised. First, the two terms (vegetative concentration/intake and reproductive concentration/intake) should be summed and not multiplied. Second, one of the I_v s should be replaced by an I_r . The correct equation is:

$$C_c = \frac{(I_v * WC_v)}{(I_v + I_r)} + \frac{(I_r * WC_r)}{(I_v + I_r)}$$

Or more simply, since $I_v + I_r = 1$

$$C_c = (I_v * WC_v) + (I_r * WC_r)$$

7. Section 3.3.2, p. 3-9, last paragraph: Please address whether site-specific particle size distribution data will be or have been collected as part of the RFI/RI for Operable Unit No. 4. The first sentence of this paragraph states that particle size distribution data will be input as code defaults if no data are available from site characterization activities. The Work Plan should indicate whether data of this sort can be expected to be available.